AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

NEW YORK, SATURDAY, JULY 2, 1927

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Designers and Builders of
BY-PRODUCT COKE AND GAS PLANTS

Chicago Pittsburgh New York

GLOVER-WEST
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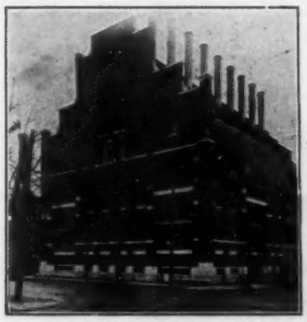
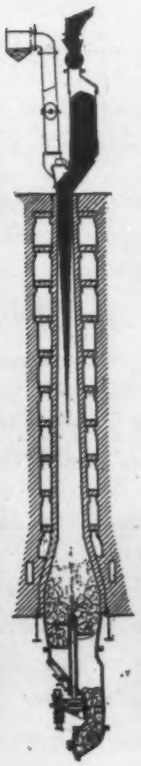
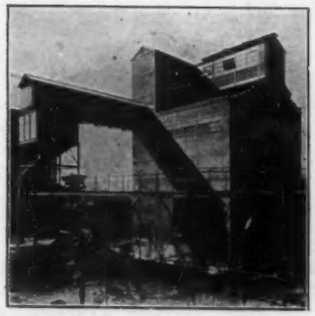
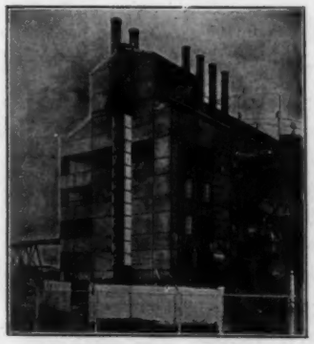


Toronto, Ont.
5,000,000 cu. ft. per day





Fargo, N. D.
800,000 cu. ft. per day



Portland, Me., 2nd Plant
750,000 cu. ft. per day

Fall River, Mass.
1,600,000 cu. ft. per day

Plants *Completed* in 1926 and 1927

Also Completed—Stamford, Conn., 1,100,000 cu ft.; Buenos Aires, 3,500,000 cu. ft. Santiago, Chile, 3,000,000 cu. ft.; Toronto, Ont., 600,000 cu. ft. (extension)

Under Construction

Springfield, Mass. ..... 2,800,000 cu. ft.

Pawtucket, R. I. ..... 1,060,000 cu. ft.
Faribault, Minn. ..... 400,000 cu. ft.

WEST GAS IMPROVEMENT CO.

Builders of Coal Gas Plants

441 Lexington Ave. New York.

American Gas Journal

SIXTY-SEVENTH YEAR

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AMERICAN
GAS JOURNAL
Established 1859— Pioneer of the Gas Industry

Vol. 127. No. 1. NEW YORK, JULY 2, 1927 Whole No. 3639

Buying Broadcast Time for Public Utilities*

Broadcasting is of value if properly planned

Henry Obermeyer

Assistant to the Vice-President, Consoliated Gas Company of New York

Introduction

HAVING been through a single broadcasting season, I suppose I can claim to be a qualified expert on the entire subject. At least that is how I have recently heard an expert defined: as one who has not yet learned enough of a subject to be aware of his ignorance.

Last year at this time you had the pleasure of hearing Mr. Martin P. Rice, of the General Electric Company, express the view that radio broadcasting seemed to be particularly valuable in the field of public utility advertising, because it has the peculiar advantage of expressing personality and of reaching the customers of a public utility in their homes when they are at leisure and their minds are receptive.

Many of us listened, learned and inwardly digested Mr. Rice's wisdom; this, therefore, is somewhat in the nature of a brief report of one who went back and put the theory to work, with what success you may judge hereafter.

Response to Questionnaire

When I was notified last month that I was to appear on your program, I immediately adopted the first defence of a self-appointed committee, and sent out a questionnaire to the approximately 180 public service holding or operating companies represented in this association.

Eighty-six companies responded to the questionnaire and of this number forty reported the use of radio broadcasting facilities, and a half a dozen more said they were preparing or considering radio programs for the future. Among them they had expended in two years approximately $515,250, including the salaries of talent, station charges, advertising of programs and the cost of producing booklets or premiums for distribution.

These figures are respectable but not sensational. At the present time they indicate nothing more than respectful attention to a new school which modern science has offered to the advertising man.

We can continue to be both respectful and attentive without committing ourselves one way or the other.

Each of us has our own problems to solve. Whether my company or your company should engage the facilities of a broadcasting station—the question depends solely upon whether or not the radio will help us to accomplish a specific object more effectively and more economically than any possible alternative medium.

Must Have Definite Objective

Whatever you do, don't let anyone induce you to "go on the air" in grab-bag fashion for the sake of discovering what it will do for you. Without a pretty definite objective your radio program will almost certainly be fruitless.

A public utility's needs are very different in many respects from those of ordinary commercial organizations. For one thing, it is seldom if ever in need of so-called name publicity. And secondly, there is, or should be, a very definite limit on the part of public utilities to the purchase of good will with any other currency except that of maintaining and improving the quality of service for which it was created.

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*Delivered before the annual convention of the Public Utilities Advertising Association, Denver, Colorado, June 27, 1927.

Failure to understand these fundamental characteristics has caused the representatives of some broadcasting stations to make claims which any utility man recognizes as absurd, and as a result of which he immediately dismisses the entire subject from serious consideration.

The damage done to commercial broadcasting by such claims and by the failure in many instances to adopt the broadcast medium specifically to utility advertising was vividly illustrated by the response of more than a score of public service companies who had rejected radio broadcasting for cause.

Why Some Do Not Use Radio

Here, for example, are nineteen bona fide reasons why more public service organizations are not using the radio to reach their customers:

1. The difficulty of putting over a story which is not of sufficient interest to the general public.
2. Responses from our own customers would be too small to justify station rates which are based on a wide coverage.
3. Radio fans are already complaining of too many local programs, whereas favored stations are too far distant for our use.
4. The expense is too great. (Needless to say this reason is given by many companies who are spending quite respectable sums on other mediums.)
5. It is doubtful if we could reach the people we want to reach by radio.
6. We feel that we can use our small advertising appropriation in more productive channels.
7. The character of our business does not warrant this kind of advertising.
8. There is only one broadcasting station in the town served by our company and this is not available for commercial broadcasting.
9. Our operations are too local and a really good program would cost too much as compared with the size of the audience. Large radio broadcasting stations have too much waste circulation, while small ones do not have enough prestige.
10. Our program failed through using an unpopular station, may try again.
11. Results of last radio campaign do not justify the expenditure. We may also try again.
12. We find we get better results with other advertising mediums.
13. Our advertising is confined only to commercial sales and would, therefore, not lend itself to radio broadcasting.
14. We believe radio broadcasting is useless unless especially good programs are given at unjustifiable expense.
15. Use of radio is impracticable, owing to location of our properties.
16. There is no demand from our customers for radio broadcasting.
17. We believe a public service company should remain in the utility business.
18. The poor quality of service given by local broadcasting stations prevents us from using this medium.
19. Advertising cannot be done successfully over the radio except at a sacrifice of circulation, which thus kills itself.

Any other type of broadcasting is name publicity which is of no value to us, as we demoinate the field.

Musical Program Not Always Necessary

The result of these and similar objections is that the successful user of radio time in the public utility fields has usually been forced to cut his clothes to fit his own back.

That at least, if you will pardon a personal reference, was our experience in New York. We were urged, of course, as I suppose nearly every commercial broadcaster is urged, to sponsor an elaborate musical or entertainment program. Under certain circumstances we might have done so.

But our purpose was two-fold: first, to establish a personal contact with large numbers—as large as possible—of our customers who were interested in improving the comfort and efficiency of their homes; secondly, to acquire for our Home Service Division and other domestic activities such additional degree of prestige as would result from a disinterested and authoritative educational program.

Music would not have done that for us. Neither would the broadcasting of recipes nor "service talks" by officials of the company.

Besides, we had another problem to deal with—and here, I believe, we eliminated the objection which has kept many local public utilities out of the radio field—the problem of waste circulation which has been created by the popular broadcasting station which covers a wide area and bases its charges on reaching a large but scattered audience.

Program Concerned With Home Making

This, then, was our program—a practical course in what we called "The Art and Science of Home Making," presented in a series of fifteen-minute morning lectures over the New York station of the National Broadcasting Company, and delivered by a representative of Teachers College, Columbia University.

Since the lecturer's reputation both as an educator and an authority on home making problems is among the highest in the country, we offered her an entirely free hand in planning a program which would be appreciated by our customers as an added service, and which, at the same time would tie up, in a most direct way, with our domestic activities.

It was our thought from the beginning that other utility companies and their customers within easy radius of the broadcasting station should derive the maximum benefit resulting from such a program—and here the problem of waste circulation came in. It was only a step, therefore, to the creation of a "Broadcasting Committee of Greater New York Gas Companies," which was later extended to include companies serving Westchester County and portions of Connecticut.

These separate utility organizations—there were really fourteen in all—agreed to bear their pro rata cost of the entire program, from beginning to end, each company's share being based on the number of meters served.

With the assistance of the American Gas Association, as a sort of clearing house, more than a score of other gas companies in upper New York, Connecticut, Massachusetts, New Jersey, Pennsylvania and Ohio, were able to establish similar contacts with customers who had communicated with us or with the broadcasting station.

So much for co-operation!

It was the end, not the means, that held our interest. Therefore we did not feel it necessary to require radio broadcasting to perform the entire job alone. Rather, we preferred to utilize the radio as the hub of a wheel around which the spokes of related activities might be made to revolve.

Booklet Prepared to Tie-in With Broadcasting Program

First, we prepared a booklet containing ten chapters by our lecturer on general home making problems, as well as approximately 150 tested recipes from the Home Service Departments of other gas companies with whom we were co-operating. Then we advertised the book, not only in the announcements over the air, but likewise in the newspapers with our program (more than half of our total appropriation for radio was spent in the newspapers) as well as on floor display posters, backs of gas bills and in customer publications.

Approximately 31,500 letters were received, during a total of four and a half hours on the air, requesting this booklet and commenting on the program. By explicitly limiting the distribution of the book we were able to confine more than 28,000 of these letters to persons residing in the territory served by the Broadcasting Committee.

As far as possible, all requests were acknowledged under separate cover over the signature of the president of the company, thanking the writer for her interest and inviting her to take advantage of the classroom lectures conducted by our home service divisions. An application form card, requesting a complete program and further information with respect to cooking classes was enclosed with every letter, approximately 720 such applications being returned to one of the co-operating companies from this source alone.

Under cover with the recipe book we enclosed pamphlets and other direct mailing matter, the return from which was also highly satisfactory.

Although I have gone at length into this one program, with which I had such a pleasurable experience, it illustrates only one of the many possibilities for radio broadcasting by public utilities.

Getting a List of Prospects

President Blanchard could tell you another, and possibly more interesting, story, with respect to the broadcasting of the Cities Service Company, which, in a somewhat different way, using a splendid musical program as a good will and "attention-getter," is acquiring a list of persons sufficiently interested in the management of the family income to write for the booklet on budget making which that company has prepared.

Such a list is obviously of great advantage in the sale of utility securities, and I understand that the response is infinitely greater, with less expenditure of money, than has ever been achieved through coupon advertising using publications alone.

The Consumers Gas Company of Toronto is also among those getting satisfactory results from a radio cooking school. When this company first began its broadcasting they invited their radio audience to become enrolled members of the class. By sending in their names and addresses they received a radio school note book in which they were supposed to write down the recipes as delivered. Approximately 5,000 of these books are said to have been requested and many letters are constantly received from women expressing their thanks for the benefits derived from this school.

Music and Educational Talks Employed in Nashville

The Nashville Railway and Light Company confines its program to music and educational talks, including safety advice, letters from the public with respect to service and addresses by executives of the company. This company reports a renewed effort and pride on the part of their employees, who feel that the public is watching them more closely than before.

The Indianapolis Power and Light Company broadcast musical, domestic science talks and educational programs, and feel that they incur public good will by furthering the civic and business interests of the city which they serve.

The Public Service Company of Northern Illinois, with a similar type of program, believe that sponsored programs mixed with good, interesting, educational features are good advertising, but that the popularity of the station is an important factor.

The musical program of the Southern Canada Power Company is supplied by its own company orchestra on a Sunday afternoon basis and favors continuation of the idea from the good will point of view.

The Mountain States Telephone and Telegraph Company of Denver is more ambitious furnishing light opera music by a specially organized mixed chorus consisting, mostly, of outside talent. The company writes that the chief result has been enhanced respect for the company by reason of the high character of its programs.

Believes Sales Have Been Increased by Use of Radio

The Northern States Power Company of Minneapolis believes that sales have been materially in-

creased as the result of its educational talks over the radio.

The Public Service Company of Colorado considers its musical and educational program sufficiently justified by keeping the company favorably before its customers.

The United Railways and Electric Company of Baltimore has combined a very high type of radio program with a series of interesting literature on music as well as the services rendered by the company, a somewhat similar tie-up being made by the New York Edison Company. The United Railways Company reports the receipt of hundreds of letters, nearly all of which testified to a growing appreciation of its problems and a quickening of kindly feeling toward the company.

The Laclede Gas Light Company, the Peoples Gas Light and Coke Company of Chicago, and the Public Service Gas and Electric Company of New Jersey are typical of many using their director of home service activities in a daily broadcasting of recipes, menus and domestic science talks.

The Pacific Power and Light Company, Portland Gas and Coke Company, and the Northwestern Electric Company of Oregon sponsored a joint musical program under the name of Public Service Little Symphony.

Commercial broadcasting by public utilities is feeling its own way, by necessity, but if the experience of those who have had the opportunity of experimenting with the new medium is of any value to future broadcasters, I believe we can at least settle upon some of the mistakes to be avoided.

Objective Must First Be Ascertained

First of all, there is the primary lesson learned by all advertising men, and then so often forgotten when they become directors of broadcasting: first, find your objective, then build toward it.

Don't strain too hard to find out what the public wants. Theatrical producers learned that lesson years ago. It probably doesn't exist, so, in commercial broadcasting, prepare your programs in a way that will advance your interests, but in the most attractive and entertaining way possible. It is the same principle which holds good in all advertising.

Don't be afraid to attract letters, but be sure that the premium, prize or booklet that you offer helps to advance the objects of your organization, whether it be for good will, sales or better service. Then, and then only, will such responses be a true test of the value of your entire program, of which the broadcasting is only a part. If it accomplishes nothing else, it will get your customers in the habit of turning to their gas or electric company—a not entirely imponderable gain.

Don't be fearful of coming after a program similar to yours. It is easier to talk to an assembled audience than to get one together.

Don't feel you need a grand opera star or a world's heavyweight contest to attract an audience to your program. A talk on oven cooked meals will appeal to a limited group, but may give you more for your money than a billion looking only for free entertainment.

Don't let the broadcasting director knock all the commercialism out of your system. He'll try to. That's his job.

If you are an electric company, and your object is to make people sit up late to burn your current, don't start broadcasting, as many do, hours before any respectable family thinks of going to bed.

If you are a traction company or a railroad company, don't make home life too attractive with your musical programs. A good travel talk is the thing to stir that wanderlust.

Refrigerators in the summer and vacuum cleaners in the spring are still objects of public interest.

And, finally, don't fear to induce people to visit your place of business. There are many ways of doing that by radio.

Mr. Felix says: "When an ingenious program director discovers a way in which to use the sponsor's product which is a service and entertainment to the listener, he is using the broadcast medium to the greatest possible advantage."

¤ ¤ ¤ ¤

Heat your Home with Gas
and Enjoy Real Comfort
THIS YEAR
LAST YEAR
The gas furnace in the basement is controlled from a clock thermostat placed upstairs.
A clean, uniform heat is maintained thruout the entire house. The fuel bin and furnace tending are banished.
Expert heating engineers will survey your premises and furnish estimates of equipment and maintenance costs for heating your home with gas. Telephone or write, the Industrial Division, 180 Remsen Street.
Telephone: TRIangle 7300
The Brooklyn Union Gas Company
Plan Now for House Heating

Advantages and Disadvantages of Dry Quenching of Coke*

With special reference to the quality of coke produced

A. M. Beebee

Superintendent Gas Manufacturing Department, Rochester Gas & Electric Corp., Rochester, N. Y.

THE gas industry, particularly the coal gas process, with the installation of waste heat boilers and the recovery of sulphur, in addition to the usual by-products of a coking plant, has gradually approached the utilization acme of our friend the meat packer, not only in that all wastes are put to useful work, but also in that except in the case of continuous vertical retorts, we, too, had a "squeal" which was not recovered, namely, the sensible heat of the hot coke.

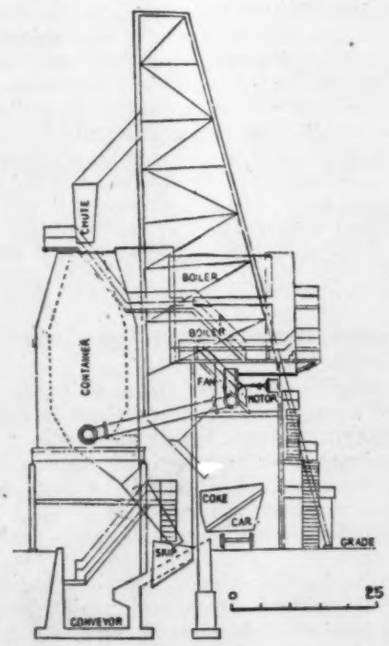


Fig. 1—Side Elevation of Sulzer Dry-Quenching Plant at Rochester. Containers, boilers, fans and motors are in duplicate.

It is only natural, therefore, that effort to utilize this "squeal" of the gas man should have been made.

Our company, after studying the subject, purchased a plant of the Sulzer type, designed by the Sulzer Freres Company, of Winterthur, Switzerland, and erected by the J. G. White Engineering Corporation of New York City, which is the first plant in this country.

Since such a plant was entirely new to the American coking industry, considerable interest was aroused, and as a result many investigations and considerable thought has been given to its operation since it was first started up in late September of last year.

In outlining the advantages and disadvantages of the dry cooling of coke, I shall, of course, be obliged to confine myself to a dry quencher of the Sulzer type.

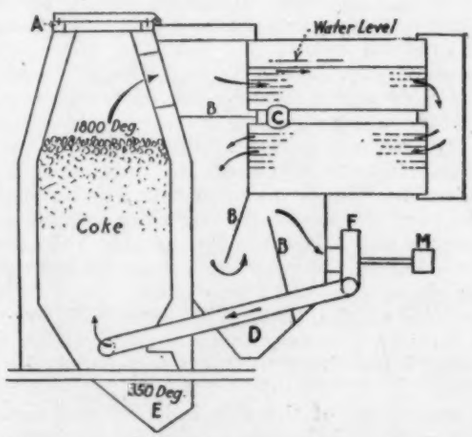


Fig. 2—Section Through Main Elements of the Dry-Quenching Unit, Showing by Arrows the Closed Circulation of Inert Gasses. Coke at 1,800 deg. is cooled to 350 before withdrawal, the dissipated heat being used in the double boiler to evaporate water into steam. In the diagram, A is the water seal at coke entrance; B, baffles; C, boiler cross connection; D, dust catcher; E, coke removal; F, the fan, and M, its motor.

Sulzer Dry Quencher

The Sulzer dry quencher consists of a plant whose object is to transform the sensible heat of the hot coke into high pressure steam for power purposes by circulating inert gases (in our case products of combustion) through a container full of the coke to

*Abstract of a paper read before the Canadian Gas Association, Toronto, Can., June 16-17, 1927.

be cooled and the hot gases then passed through a boiler to be cooled with the resultant generation of steam, and the cooled gases forced by a fan back to the coke container again, the process being continuous. A glance at Fig. 1 and Fig. 2 will make the process clear. A very complete description of the operating condition of this plant and the detailed figures which justify the conclusions which have been given later in this paper, were covered by the author in a paper on this same plant which was presented before the Eastern States Blast Furnace and Coke Oven Association in March.

Our dry quencher is made up of two identical units with their boilers of 212.5 tons rated capacity each placed side by side, making a total of 425 tons of cooled coke daily capacity. These two units are charged by a single skip hoist between them, the details of which will be covered later. Provision has been made so that a third unit can later be installed to feed from this single skip hoist and to discharge onto the wharf in a manner similar to the existing two units.

Container Holds Forty Tons

Each container holds about 40 tons of coke continually. When a container is to be charged with a load of hot coke sufficient has to be drawn out of the bottom so that there will be room at the top for the new charge. This amount to be drawn out is gauged by an ingenious measuring device that readily indicates the top level of the coke in the container to the operator below.

Top and bottom doors, as well as the whole system, have to be air tight to prevent combustion of the coke. The charging is carried out by an automatically operated revolving chute which takes the hot coke from the skip hoist and discharges it into whichever one of the two containers is to be charged. The doors at the top of the container and the chute are automatically operated by the skip hoist reaching a predetermined position, not unlike some blast furnace charging which I have seen.

The coke at the bottom is drawn off onto the wharf through a feeding device through an air tight door that is operated by the operator of the dry quencher.

The movement of the skip hoist up and down is entirely automatic after the pushing of the button by the operator designating which container is to be charged, and the various phases of the operation of the hoist are so interlocked that a failure to function properly is theoretically impossible.

Must Not Have Two Places Open at One Time

The fans operate continuously, even when charging or discharging coke, as any one point in the circulating system can be opened up without harm, as all pressures through the circulating system quickly adjust themselves relative to the open point as zero. It is analogous to grounding an ungrounded electric system at any point and voltages throughout the system adjusting themselves relative to ground. Since nothing can get in or out in the case of the dry quencher, no harm is done. Extreme care, however, must be exercised not to have two places open at the same time, as such would allow the air to be drawn in at a point of suction and discharged at a point of pressure, which, of course, will lead to combustion of coke, and the possibility of explosive mixtures in the circulating gases. This latter danger is quite remote, however, due to the large percentage of inerts in the circulating gases, so that explosive mixtures are almost an impossibility, as theoretically it is not possible to get mixtures within the explosive ranges.

There are, of course, as might be expected, some points in our design which I think could be improved. The handling of the coke is unusually severe, and considerable breakage results, as you will see from the following data. This, to us, is not an objection in our case, as will be shown in the data later, as we have to crush all our coke over 2¼ inches, as we supply entirely a domestic market, and the dry quencher, as we have it, acts as a very fine coke crusher and saves us the power and expense of maintaining a coke crusher.

The economies of the outfit can be calculated from the data following for any local condition, depending on the various factors entering into the cost. The total investment in our case was something slightly under a quarter of a million dollars, and the operation can very easily be handled by one man.

In the event a dry quencher is installed large enough to handle the entire coke production, it is quite evident that this operator can supplant the operator now necessary to operate the coke wharf for wet quenching. In other words, if we did not have to have a wharf operator for handling our wet quenched coke, no additional labor would have been necessary.

Intangible Benefits From Dry Quenching

The intangible benefits from this system, of course, are many and a value on them is difficult to obtain. They, however, should be mentioned.

(1) Elimination of steam and vapors of wet quenching in a community such as ours where a residential and office community is close at hand is of considerable value. This, of course, varies with plant location.

(2) Elimination of wet quenching vapors certainly should reduce corrosion, maintenance and painting expense of all adjacent steel work. Estimates of this value are very difficult to get.

(3) Dry quenching should aid considerably in reducing the maintenance and prolonging the life of hot coke car equipment.

(4) Elimination of wet quenching should enable better plant housekeeping conditions.

(5) In our case, where we are feeding a domestic market, the fact that the large coke is broken in the handling is an advantage, as it saves us the power and maintenance to keep up a coke crusher.

(6) Better efficiency results in apparatus using the resultant coke, such as water gas machines and producers, due to the use of an absolutely dry coke.

(7) There is one other intangible benefit from dry quenched coke which is merely mentioned here as an interesting point for consideration, as we, as yet, have not sufficient data to substantiate it. When coke is wet quenched, water vapor is drawn clear into the heart of the coke, which we all know is only removed with great difficulty through drying. Dry quenched coke, even with a similar moisture content, may therefore have a beneficial effect on fuel beds in water gas machines and producers for the following reason: This result might be possible due to the fact that in the case of the dry quenched coke such moisture which is on the surface is quickly driven off and only goes to reduce the temperature of the exit gases from the fuel bed, and as such has little or no effect on fuel bed temperatures. It has generally been supposed that such would be the case with the moisture of wet quenched coke. However, in the case of the wet quenched coke, the moisture in the heart of the piece is evolved counter current to the heat flow into the piece of coke and considerable retardations to the moisture evolution should result. This might result in the moisture not being given off till the coke piece is well down into the fuel bed and hence have a considerable effect on fuel bed temperatures. This theory has some substantiations, in that it is quite generally known in the gas industry that continuous vertical coke will give results in water gas machines or producers which other coke cannot equal. This has in the past always been attributable to the structure of the coke.

Improvement Probably Function of Dry Quenching

However, last year the Carbonization Committee of the American Gas Association carried out through the Bureau of Mines and the Massachusetts Institute of Technology some exhaustive tests to find out if the structure was responsible and the reactivity of the coke from continuous verticals as compared with cokes from other types of carbonizing plants gave no justification for increased results. It has recently occurred to me that perhaps this improvement in operation in the case of continuous verticals is a function of dry quenching along the theory just outlined, as in continuous verticals the quenching is internal of the retort and therefore dry. We shall soon be in an excellent position to prove the point one way or the other, as we will soon carry out some tests in our producer and water gas machines, where the only variable will be the method of quenching, as the type of carbonizing, kind of coal, etc., will be the same in both cases. I do not wish to be understood as stating that the above theory is a fact. I merely mention it as an interesting sidelight as food for thought on this subject.

(8) One other intangible benefit from the dry quencher is the reduction in maintenance and operating difficulties of the conveyor carrying the coke, especially in the winter time. When wet quenched coke is used the wharf belts are most difficult to maintain during freezing weather conditions. With dry quenched coke the belts are free from moisture and are warm and do not become stiff and coated with ice, so that operation of our belts adjacent to the wharf has been considerably improved.

Actual Operating Results

Since starting our average operating results have been as follows:

Average power consumed per day, fans...	858.2 K.W.H.
Average power consumed per day, hoist..	82.8 K.W.H.
Average temperature of feed water.....	119.3°F.
Average steam pressure	139.2 lbs. / sq. in.
Average coke charged per day, 1,000 lbs...	728.4
Average temp. of hot coke inlet to quencher	1275°F.
Average ash content of coke.....	10.5 %
Average breeze content	5.5 %
Actual steam production under above conditions per 1,000 lbs. coke cooled, determined by water meter	402.6 lbs.

The last two months since we have had more uniform operation our steam per 1,000 lbs. of coke has averaged 429.0 lbs.

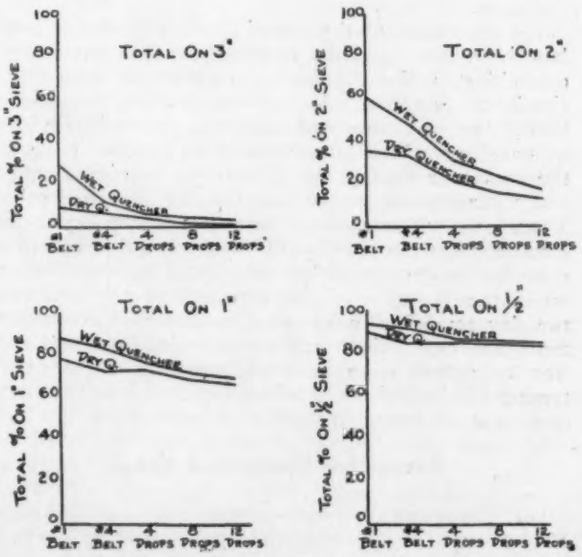


Fig. 3. Curves showing sieve tests of total coke after belt handling and repeated shatter test drops.

Note—The 4-8-12 drop shatter tests were made on coke from No. 1 belt. The sieve test on No. 4 belt was simply included to show the effect of a degree of breakage less than 4 drops.

Coal—Straight Pittsburgh three-quarters screened high volatile coal of average analysis:

Volatile	34.0
Fixed Carbon	58.0
Ash	7.0
Sulphur	1.0

The coal is crushed in roll crushers, but is unpulverized.

Effect of Dry Quencher on Resultant Coke

The size of the coke is of prime importance to a coke plant, depending on the type of its market.

In the usual process where a shower of water is thrown on the coke, it would seem that contraction strains would be set up which would tend to make the coke fragile and full of fractures, which would be eliminated by the slow cooling of the dry quenching process, and which would result in a stronger coke. At least such was our expectation.

In carrying out all our tests every effort was made to obtain large representative samples. Tons of coke samples were taken in making this study.

A great variety of tests have been run and the data most carefully taken, from which the following results seem to be very evident:

(a) Coke on the wharf from the dry quencher is smaller than wet quenched coke and contains a larger percentage of breeze than the wet quenched coke. The dry quenched coke, however, showed up better on a shatter test, which tended to bear out our expectation that the dry quenched coke was stronger.

(b) However, at the wharf the dry quenched coke has been considerably handled in the process of quenching, while the wet quenched has had practically no handling. It was immediately suggested that if the wet quenched coke was given an amount of handling which is necessary to get the coke to the customer that it would possibly become smaller and contain more breeze than the dry quenched coke. Therefore, we carried on further tests in our coke conveyor system after both had been subjected to a reasonable amount of handling, and we found that while the sizing was closer together, nevertheless, the dry quenched coke was smaller and contained more breeze. This would seem to indicate that the dry quenched coke resisted handling better and tended further to confirm our expectations that dry quenched coke was stronger.

Reason for Strength of Coke

(c) The point is next raised that the apparent strength of the dry quenched coke may be due to the fact that it has been previously handled more severely and only the stronger pieces have survived, and is not due to any stronger characteristics of the coke. To prove this one way or the other the coke samples were subjected to repeated Shatter testing and the data clearly shows that the wet quenched coke at first breaks down more rapidly than the dry quenched coke, but after four drops the degradation proceeds at the same rate in the case of both cakes, and that at all times the dry quenched is smaller and contains more breeze, as the curves of degradation do not cross, no matter to what further degree they are handled. See Fig. 4 for the curves showing the rate of the degradation of the two cokes when subjected to repeated Shattering. If the dry quenched coke were inherently stronger the lines should cross after a certain amount of handling, and eventually end up with a smaller coke and more breeze in the wet quenched coke. This, however, did not happen. You will note that the data is remarkably uniform for all sizes of coke. We have a vast amount of screening data and tests and the necessary calculations involved covering this point, which I will not bother you with or confuse you by giving at this time. This indicates that there is no inherent greater strength on the part of the dry quenched coke, which is very contrary to our expectations and indicates that the apparent strength is due only to the fact it has been rougher handled and that only the stronger pieces have survived.

This was so contrary to our expectations that we were anxious to prove our conclusions. This would be possible if we could subject the two cokes to identical handling, including the process of quenching, which could be accomplished by running dry quenched coke through one container in the usual manner and wet quenched coke through the other container, which had been previously cut out of operation. If the dry quenched coke was stronger the two cokes should have different sizes, while if they were of similar strength as our previous tests had indicated, then we should have cokes resulting from the two containers of similar size and strength to Shatter testing.

The resultant data is presented, for it so clearly proves the point:

		Dry Quenched Coke at Wharf After Passing Through Container	Wet Quenched Coke Run Through Dry Quencher Cold Container
% on	4 inch.....	.92	1.09
	3 inch.....	7.27	7.26
	2 inch.....	31.70	31.90
Total on	2 inch.....	39.89	40.25
	1 inch.....	41.90	42.00
	½ inch.....	9.70	8.72
Through	½ inch.....	8.48	8.79

Apparently dry quenched coke is not stronger, and its apparent strength is due only to the fact it has been more severely handled and the stronger pieces survived.

Smaller Size of Coke May Be a Distinct Advantage

(d) This apparent smaller size of dry quenched coke may be a disadvantage in some markets, while in others it may be an advantage, particularly where meeting a domestic market, where crushing of the large coke is necessary. In such a case where the larger material has to be crushed the resultant breeze as a result of crushing may more than offset the additional breeze content of the dry quenched coke. We therefore carried out a series of tests after crushing both cokes which passed over a 2½ inch grizzly, and the results showed that in such a case the resultant breeze in the total coke was higher in the case of the wet quenched coke, due to the larger amount of coke which had been crushed. Thus the dry quencher in reality is a very successful coke crusher, and in addition eliminates the power and wear of a coke crusher if crushing is necessary.

(e) The above tests were all carried out on coke from straight high volatile crushed, but not pulverized coal. Naturally many would be interested as to what the results might be with coke from blended

coals. Arrangements were therefore made at the suggestion and through the co-operation of the Koppers Company to have five cars of their blended pulverized coal from their Seaboard plant sent to Rochester for running through the ovens and through one container of our dry quencher. This coal consisted of 70 per cent Roda coal and 30 per cent Tams Pocahontas coal. The results showed exactly the same general characteristics between the two cokes as shown by the coke from the straight high volatile coal, except that it showed the blended coke to be a little more rugged in both cases.

Further detailed tests on shattering of this coke showed that the characteristics brought out in our previous tests were again confirmed in that the apparent strength of dry quenched coke was due to the fact the dry quenched coke had been rougher handled and that when subject to repeated shattering the two kinds of cokes broke down at substantially equal rates after the first breakage.

Dry Quencher Advantageous for Domestic Market

From the above it would appear that the dry quencher was an advantage for meeting a domestic market, but of questionable advantage for blast furnace use. However, the Sulzer people have recently come forward with a point, which at least seems reasonable, and I offer it for your consideration. Their statement is as follows:

"We have heard from two separate sources that future practice in blast furnace operations will be to let the coke fall several times before it is used in order to break up the large cracked pieces and so obtain only solid pieces of uniform size for introduction into the blast furnace. In a blast furnace coke undergoes practically the same treatment as when it is passed through our coke containers, as in the travel through the blast furnace the pieces become smaller until they pass through the hot zone. This causes, as we know, fine coke and dust, which often leads to trouble in the blast furnace. However, where great importance is attributed to having a coke in solid pieces, it would appear that the somewhat rough handling in the dry coke cooling process is really advantageous. In passing through a dry quencher container one does not obtain so much large coke, but it is on the other hand in pieces of more uniform size, which are not so liable to break up when passing through the fuel bed into the real reactive zone."

Advantages for Blast Furnace

There is another point which has recently come to our attention as indicating the advantages of dry quenched coke for blast furnace operation, which is quite clearly covered in an article by Mr. Edgar C. Evans, of the fuel department of the National Federation of Iron and Steel Manufacturers, which is entitled "The Coke Problem from the Point of View of the Iron and Steel Industry," which appeared in the January 2, 1926, issue of the British Gas World. I will repeat a paragraph which I believe is pertinent:

"I believe, however, that the main reason for the different action in the furnace of properly against improperly quenched coke is to be found in the reactions of the moisture in the furnace itself. We know from our laboratory experience that it is very difficult thoroughly to penetrate a piece of coke with water. That the hot coke is able to take up high percentages of water in the short quenching period is easily explained by the fact that in cooling down the gases contract, thus sucking the water into the innermost cells. It is equally difficult to expel every molecule of water from coke, and over-quenched coke charged into the furnace must retain its moisture until the coke gets into fairly hot zones. When this moisture is driven out of the interior of the coke pieces it is heated to a point where, in the presence of so much red-hot carbon, it is instantly dissociated. That this takes place we know from the increased hydrogen in the gases when using over-quenched coke. The nascent oxygen, just liberated, eagerly combines with carbon to CO or CO_2, depending on the local temperature, and increases the volume of top gases. This may explain why, with improper quenching, the top gases of the furnace look rich and abundant, indicating a hot furnace, while the furnace actually works with a cold hearth and makes off-grade iron. Undoubtedly, the sudden liberation of these gases from the coke cells is accompanied by a more or less breaking of the coke pieces, which thereby become more vulnerable to CO_2. The reaction of CO_2 on carbon being endothermic tends to lower the top temperature, but increases the volume of gases. But the carbon thus consumed is lost to the hearth, and the furnace shows a heavier coke consumption.

"The fact that wetting the coke in the skip has no influence on the action of the coke in the furnace is no argument against this theory, for the reason that water applied to the surface of coke does not penetrate the cells and therefore has no chance to descend far enough into the furnace to be dissociated, but is driven off near the top as steam, without injuring coke."

Disadvantage of Dry Quencher

(1) Extreme care in the design of the equipment is necessary. We have been unusually fortunate, however, when you consider that our plant is the first one in this country. We have, however, some points which undoubtedly could be improved upon in future design. The points which have given trouble, however, have been largely in the nature of auxiliaries and not a fundamental of the quencher. That part of the equipment which has to do with the cooling of coke, which was designed by Sulzer Freres, has been remarkably free from defects. We recently had both containers down for inspection after seven months of operation and the inside of the containers, fans and boilers were in a very fine condition.

(2) If large coke size is desired, based on our

(Continued on page 20—advertising)

Foresees Steadily Rising Market After Short Decline

Seasonal divisions of business year become obsolete

Walter Alwyn-Schmidt

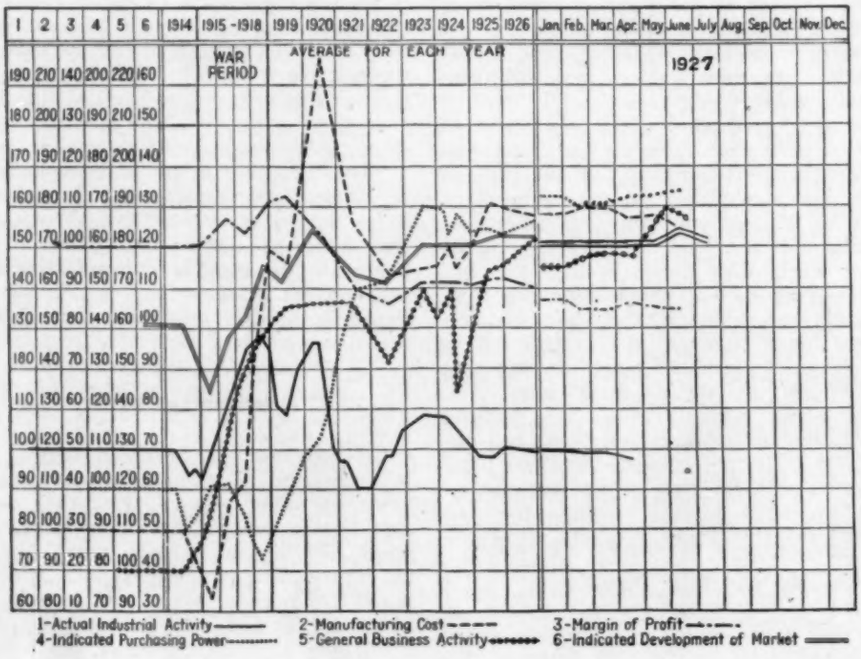
THE present spring season has been remarkable principally for the fact that there was no season. Manufacturers and merchants are inclined to blame the weather for this situation, but close observers are of opinion that an end has come to the more or less arbitrary seasonal division of the business year, to make room for a different system of handling our markets. There are, of course, still many industries which are dependent upon the climatic changes of our northern hemisphere.. But even in these, modern industrial technique has eliminated more and more the effect of the climate upon manufacturing. In turn this has resulted in a similar elimination of the system of seasonal selling.

Remote Buying Does Not Interest Buyer

This situation is not exactly new. It has been heralded for a long while by curious shifts in the opening dates of the so-called seasonal industries, each industry advancing these dates, until today spring goods are ordered in the fall. It stands to reason that buying for so remote a future date cannot be in the interest of the buyer. How can the retailer be expected to commit himself to large expenditures to be made half a year and more from date in a world living at the pace of 1927? The dress goods industry especially has suffered from this source.

As usual, the disease has also provided already its own remedy. European countries, as France, England and Germany, have tried to eliminate the effect of the season upon industry by increasing the selling field. The export business has provided in their cases the required solution of the manufacturing problem. Our own United States is now finding a similar solution which is provided by the enormous size of our own market. Quite exceptional opportunities are at the disposal of the American manufacturer bent upon beating the danger of seasonal depression. Large parts of the United States do not know a cold season. Spring, summer, fall and winter blend into each other in this market of one hundred and ten million consumers. All the manufacturer need do to eliminate the seasons from his business is to spread his trade sufficiently over the whole market.

This process is now under way. When it is once accomplished the need for seasonal openings ceases. The seasonal purchase periods which have served until now as an incentive to buying become superfluous. As the result they are eliminated from the scheme of distribution.



Market Not Up With New Development

Unfortunately the market has not quite caught up yet with this new development. We still act as if the seasonal division of business were fully in force. We set dates for the wearing of straw hats or wash dresses, and we set these dates as arbitrarily as if the climate depended upon the calendar and not upon meteorological conditions, the result of preceding conditions of many years ago.

Hence the missing of a spring season becomes a debacle for a dealer. Hence industry prepares for a market carefully divided into four sections, to each of which is allotted a certain kind and quantity of merchandise.

As stated already, it seems that the end has been reached of this system of doing business. The method of buying for rapid turnover which has characterized the conduct of business for several years has made seasonal openings more or less a matter of form. The market now knows better ways to stimulate business.

For this development American commerce is today better prepared than during any other time. In fact, it could not have taken place without business having at its command the whole apparatus of intercommunication, mail, telephone, telegraph, railroads, aeroplane. Distance which formerly was the main obstacle to buying for quick turnover is rapidly cut down. Buyers located in the leading market centers can communicate the same day with their principals. The goods are on the way the day after and sold before the week is over. While all this makes necessary a closer organization and possibly adds to the cost of doing business, it has reduced, on the other hand, the risk of doing business. Situations can be made use of as they arise; actions are determined by facts.

Development Has Favored Buyer

Manufacturers, of course, are correct when they say that to date this development has favored principally the buyer. Industry still has to learn how to combine the advantages of quick selling and instantaneous manufacture. A solution no doubt will be found and there are many manufacturers already who have adjusted their productive organization so finely to the needs of the market as to have eliminated practically seasonal considerations from their manufacturing policies.

It is for this reason that the present breakdown of the spring season will not be accompanied by a severe setback to industry in general. True, there has been a falling off in the employment figures, and most of the so-called seasonal industries have not reached their expected maximum for this time of the year. But the manufacturing profits have remained upon a comparatively high level.

Outlook Is Not Alarming

Therefore, allowing even for a general slowing down during the next few weeks, industry will not be weakened fundamentally and will be able to resume its normal activities with its organization in good order. Similarly, the buying public does not seem to be unduly alarmed over the outlook. No reductions have taken place in the earnings of the salaried men, and unemployment is not excessively severe, considering the time of the year.

True, a situation like the present is extremely trying for the manufacturer. It strains his resources. But favoring, as it does, the distributor, it leaves in healthy condition the channels through which must flow the trade of the nation from the manufacturer to the consumer. This is a great gain against the experience of former years, where every industrial depression was followed immediately by a wave of retail bankruptcies.

While we foresee a short slowing up during the coming months, we are inclined to think that business will not show its usual summer decline, but will move forward rather upon an upward curve, steadily rising to the end of the year.

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IMPENDING CHANGES IN OUR USE OF FUELS*

Arthur D. Little, Chem. D.,
Vice-Chairman, Engineering Foundation Board

Historical Review

THROUGH the long course of centuries and down to times relatively very recent, wood was practically the only fuel used. Charcoal followed naturally as a derivative of wood. In the days of King Edward the First it was a capital offense to burn coal in London, and in 1306 a man was executed for the crime. The criminality slowly diminished in degree, but in 1550 Queen Elizabeth prohibited the burning of coal in London during the Parliamentary season for fear that "the health of the Knights of the Shire might suffer during their abode in the Metropolis." A little more than one hundred years ago it was as iniquitous, and perhaps more dangerous, to sell coal in Philadelphia than to sell liquor there today.

In 1804 the British Admiralty declared it their duty "to discourage the employment of steam vessels as . . . the introduction of steam vessels was calculated to strike a fatal blow to the naval supremacy of England."

In 1619 the growing scarcity of wood in England led Dudley to attempt the substitution of coal for charcoal in his blast furnace. The charcoal ironmasters drove him out of Worcester county. He set up another furnace at Hascobridge. A riot was organized and the furnace wrecked. In 1660 Dudley was still at work, undaunted, but unsuccessful.

Fortune dealt more generously with Abraham Darby, although with much deliberation. His use

*Abstract of a paper presented at the meeting of the Engineering Foundation, New York City, May 19, 1927.

of coke in place of charcoal began about 1730, and in December, 1756, his furnace was declared to be "at the top pinnacle of prosperity, twenty to twenty-two tons a week and sold off as soon as made at profit enough."

At a time not later than 1688, and possibly somewhat earlier, the Rev. John Clayton heated coal in a retort and obtained gas and tar. He demonstrated that the gas could be burned and that it could be collected and stored. His results were duly published in a memoir, and forgotten.

The world moved slowly in those days. It was one hundred and fourteen years later that William Murdoch, in 1802, lighted his house at Redruth, Cornwall, with gas and developed the equipment upon which the gas industry was founded. It then waited thirty-five years for the gas producer and until 1874 for Lowe's first successful water-gas plant.

The first American gas company was organized in Baltimore in 1819, where today they consume more gas in five years than they did in the first century of their manufacture.

In 1840 practically no coal was mined in the United States. In 1860 our production was only a few million tons. In 1918 production reached a peak of about 740 million tons. It is now, under the competition of fuel oil and because of more efficient use, down to about 600 million tons.

In 1860 the annual per capita consumption of petroleum in the country was .016 barrel. We are now producing nearly 2½ million barrels a week and importing oil at that.

During the period from 1815 to 1914 the white population of the world increased about three-fold, but the production of mineral fuels—coal, oil, and natural gas—increased seventy-five fold, and by far the largest proportion of this increase was in our own country.

The Increasing Demand for Energy

The pressure behind this amazing acceleration in our production and use of fuels is, of course, that insistent and constantly increasing demand for energy, which sharply differentiates modern civilization from those which have preceded it. Two pounds of coal will develop as much energy as a man at heavy labor for a day. The industrial status of a country is, therefore, largely determined by the supply of energy available to the individual worker, and nowhere is that supply comparable to that afforded him in the United States.

In 1770, except for a few small water powers, some wind mills and sailing vessels, and here and there in England a Newcomen engine for pumping water from the mines, the total power available to the world was that of human beings and draft animals. There were no railroads, no canals. The roads were bad, and the traveler was at the mercy of the highwayman. It cost as much to transport a ton of goods ten miles as it costs today to send it fifty times as far. Industry was cramped and necessarily localized; its markets were restricted, and its rewards were meagre.

The work which maintains our present social structure is not, however, the work of the man with a hoe, it is the work of the farm tractor and the harvester; not that of the Chinese transport coolie, but of the locomotive engineer with a hundred loaded freight cars behind him; not the back-breaking effort of blowing a forge by hand, but the manual control of turbo-compressors forcing the fires of the blast furnace.

Coal Our Chief Source of Energy

Since our coal must remain for generations our chief energy resource, the line of progress parallels that which leads to the better utilization of coal. At the recent notable International Conference on Bituminous Coal, President Baker, of Carnegie Institute of Technology, said: "In less than a generation the present methods of shipping coal to be burned in its raw state under boilers hundreds of miles from the mines will appear to have been primitive and rudely unscientific."

The smoke screen, which enshrouds our cities, defiles our buildings, damages their contents, depresses our spirits, deprives us of the wholesome actinic rays of sunlight, and is a constant menace to health in other ways. Though general opinion is to the contrary, domestic heaters, including those of apartment houses, are responsible for the nuisance in larger measure than the furnaces of industrial plants. Our supply of anthracite is, relatively, very limited, and we have the authority of John Hays Hammond for the statement that in the anthracite mines the natural conditions are steadily getting harder. The average depth of workings has increased 77 per cent during the last generation, and the average thickness of the beds is rarely half what it once was. The consequent high price of anthracite and the tendency of the miners to take a vacation as winter comes upon us have stimulated much earnest endeavor to find a substitute for anthracite through the conversion of soft coal to a smokeless fuel generally satisfactory to the householder.

Better Use of Coal

Foremost among these activities are the numerous processes for the so-called low-temperature carbonization of coal. Some two hundreds of such processes have been listed, but it is doubtful if ten per cent of that number have been operated on anything approaching the commercial scale. Their distinguishing characteristic is that the coal is carbonized at temperatures rarely exceeding and often below 1100 degrees Fahrenheit. As a result, there are obtained a moderate volume of gas of high heating power and valuable, in place of gas oil, for the enrichment of blue water gas, an excellent smokeless fuel in the form of semicoke, and from twenty to forty gallons of a thin tar per ton of coal. This tar is markedly different from ordinary coal tar, and has, instead, much of the character of petroleum. It may be cracked to yield 22 per cent of motor fuel of high anti-knock quality.

Time and the limits of your patience permit only casual reference to a few representative processes. That of Professor S. W. Parr, of the University of Illinois, is the culmination of twenty-five years'

study of the fundamental conditions involved in low-temperature carbonization. His process operates in two stages: a conditioning stage, in which the coal in a closed, rotating drum is quickly brought to within 25-50 degrees of the temperature at which it becomes pasty, and a coking stage conducted in a vertical retort preheated to 750 degrees C. Partly by reason of exothermic reactions within the coal the heat strikes to the centre of the mass in 10-30 minutes, with production of a dense, strong semi-coke from cheap Illinois screenings.

McIntire Process

The method developed by McIntire, at Fairmont, West Virginia, from the old Carbocoal process has a rather exceptional record of performance in that some 25,000 tons of coal have been processed. Its purpose is essentially that of making an artificial anthracite in the form of a briquetted smokeless fuel. It involves an initial low-temperature carbonization with mechanical stirring of the plastic mass of hot coal. This stage of the process yields from 2,000 pounds of coal 1,480 pounds of semi-coke, 31 gallons of thin, light tar, and 2 gallons of light oil, together with about 3,000 cubic feet of gas of 950 B.t.u. The semi-coke is then briquetted with a binder of by-product pitch and reheated, at higher temperature, with further yield of 2,000 cubic feet of 450 B.t.u. gas and 8 gallons of heavy tar. The finished briquettes, containing 8-12 per cent of volatile, are dense and smokeless.

The Green-Laucks process of the Old Ben Coal Corporation, as installed at Waukegan, Illinois, passes a thin stream of coal upward by a screw within a vertical retort, 18 feet high and 3 feet in diameter, set in a furnace, the screw being heated through the shaft. The product of this pilot plant is said to be strong, dense, and smokeless. A commercial plant with retorts 9 feet in diameter is under construction, and if it functions well mechanically it would seem likely to do so commercially in view of the low initial value of the Illinois screenings used as raw material.

McEwen-Runge Process

The product of the McEwen-Runge process, developed at the Lakeside plant of Milwaukee Electric Railway & Light Company, is intended for use in powdered coal equipment. It, again, is a two-stage process, in which the coal is first heated at medium temperature to destroy its coking property and then carbonized in a second retort. The two retorts, each 40 feet high and 6 feet 9 inches in diameter, are insulated, and one is superimposed on the other. Pulverized coal is fed into the upper retort, which discharges into a hopper, from which it is delivered to the second retort. The charge is heated by hot gases introduced into the retorts, each of which is provided with two combustion chambers. The gases enter at the bottom of the retorts and rise countercurrent to the descending coal. There is little loss of volatile material from the upper retort, and the gases are exhausted into the atmosphere. The gases from the second or carbonizing retort are removed to storage by a gas exhauster and amount to 3,750 cubic feet of 850 B.t.u. gas per ton of coal.

Few details are available regarding the one-ton retort designed by Harold Stevens and operating at the plant of Detroit Edison Company, but it is stated that results have been so satisfactory that a 24-ton plant is about to be installed and operated in conjunction with the equipment of a small gas company.

Foreign Developments

In addition to these and other processes under development in this country, much serious work is being done on low-temperature carbonization in England and Germany, and it is claimed that one or two processes at least—the Coalite process in England and notably the K.S.G. process in Germany—are on a commercial basis. The latter is operating at Essen on the considerable scale, and a plant to handle 500 tons of raw coal a day is now under construction in South Wales.

The special type of retort developed for the K.S.G. process consists of a double revolving drum, the outer shell of which is 10 feet in diameter and 76 feet long. The inner shell is of the same length, but only 5 feet 8 inches in diameter. The retort is slightly inclined and surrounded by brick work. The coal is fed into the inner drum at its lower end and as the retort slowly revolves is gradually raised by cleats to the upper end, where it is delivered to the outer shell, within which it passes downward to the lower end and is there discharged as dense, hard lumps. The external retort is heated by producer gas, whereas the inner one receives only such heat as is transmitted through the coal in the outer drum. The coal in process thus receives a preliminary low-temperature treatment before being subjected to the higher temperature, which, together with the rotary motions, forms it into lumps of the character described.

Tests on American coals with 33-36 per cent volatile yielded semicoke 1,412 pounds; tar, 30.6 gallons; gas, 3,470 cubic feet testing 772 B.t.u., and 3.3 gallons of motor spirit, per ton treated.

The economics of the situation must, of course, finally control the development of any method of processing coal. The products must be worth more than the raw coal plus the cost of processing, though the energy content of the total products can never equal that of the original coal. We can look for profit only through the change in form value.

Raw coal must continue to be for a long time to come the most economical fuel for large power stations except in situations that permit the tying together of low-temperature plants, gas works, and steam central stations, with delivery of semi-coke as boiler fuel and high B.t.u. gas for gas enrichment.

The broad opportunity for low-temperature carbonization is through the conversion of the immense available amount of cheap slack and screenings to high grade domestic fuel.

(To be concluded in July 9th issue)

WINDOW DISPLAY ADVERTISING

That sells more gas to pleased customers

Ray Martin

Display Manager, Consolidated Gas Company of New York

Special Sale on
TAPPAN GAS RANGES
For a
Short Time Only
Every Tappan Gas Range, including those with Oven Heat Control, now at reduced prices, through special arrangement with the manufacturer.
CONSOLIDATED GAS COMPANY OF NEW YORK

Forceful window display advertising should be very simple when used to assist a contemporaneous newspaper campaign.

Certainly nothing could be less pretentious than a giant reproduction of a newspaper advertisement, yet gas companies seem to hesitate to take advantage of its possibilities.

The display pictured is a direct advertisement. It must bring its observers into the store, or it has failed; because it is selling an appliance—not an idea. An appliance, already well known, needs no introduction to the gas consumer. Hence, in the case of a gas range, where a market already exists, we eliminate all educational effort in our advertising and go after direct sales.

In this respect it differs from the display that sells a thought. The very phrase, "For a Short Time Only," insinuates that an immediate decision is imperative.

Another motive behind this window display is the popularization of the shape—and the return coupon at the bottom—of this standard newspaper set-up of the Consolidated Gas Company.

Included in this display are copies of a number of the New York dailies in which the actual advertisement appeared. The centerpiece is an exact enlargement of the original without a variation of one-thirty-second of an inch.

It takes a competent display department to accurately reproduce so much detail, but don't you think such a department is an asset?

As The Journal Views It

MUTUALLY PROFITABLE MEDICINE

We are probably correct in stating that not a few gas men are communing with themselves to the effect that it was quite a daring move for the Boston company to heat its new building with gas. For our part, we do not countenance any such ridiculous thoughts.

Such a refreshing departure from the generally accepted procedure in heating public buildings, particularly gas company offices, indicates nothing less than a well-grounded faith and confidence in those precepts which we so energetically prescribe for the general public.

We are wont to work ourselves into a high pitch of enthusiasm with our preachments anent the abatement of the smoke nuisance and the emancipation of our fellow men from the baneful effects of breathing soot-tainted air. And let it be stated that all of such propaganda are correct and worth while. But it does seem that we are not quite sold on the idea in so far as it applies to ourselves.

In the old days many of us, perhaps, did not object in the least to patronizing the barber shop whose proprietor was a trifle shaggy about the cheeks or the tailor who wore trousers with a maximum of bagginess. But in this day of close scrutiny and hair-splitting discrimination your average citizen is fast developing into a mighty inquiring individual. Accordingly, whenever he hears of a gas official installing an oil-burning contraption to heat his home or, if you will, an electric refrigerator to preserve his victuals, we can scarcely blame him for being a trifle gun shy and taking our advice cum grano salis.

The message of health and cleanliness that our industry is carrying to its customers and the public in general is as "clean as a hound's tooth" and warrants scarcely any improvement. If house heating—or any other gas utilization activity, for that matter—is good for our customers, it must be beneficial to ourselves.

We are profligates in dispensing the blessings of making living easier to our customers, but exceedingly backward in sharing some of the self-same benefactions with ourselves.

The Boston company and a few others are setting for the industry a wholesome example.

ORGANIZING THE INDUSTRY'S STATISTICS

Knowing where to find reliable data and, in turn, being able to intelligently apply such information play an important part in the carrying out of any project.

In every generation, it is true, there appear geniuses who seem to possess the faculty of picking their ideas from thin air. But such characters are vastly in the minority and consequently the most of us have to study the tabulated results of what those preceding us have accomplished in helping to blaze the trail.

He would be something of an outstanding engineer or business man who could drive ahead without the aid of some recognized hand book or a careful study of past financial conditions.

The appointment of Mr. Ryan as statistician for the American Gas Association corresponds, in a sense, to the establishing of a "hand book" for the entire gas industry.

With over a hundred years of accomplishment back of us, there has necessary accumulated a great mass of useful information and data which can be of great use to the industry. However, in an unorganized condition it loses much of its potential value.

If data is in a somewhat disorganized state there is perforce much duplication in carrying on any project. More, if one continually seeks for some specific information and the same is not forthcoming, he is but little appeased in being advised that the information is somewhere about, only it cannot be exactly located.

But the success of any organization or tabulation of data and statistics depends on the constant feeding in of any new findings that present themselves. Hence, in order for the statistical department of the Association to function in a manner that will be most advantageous for all concerned, we would suggest that the various companies co-operate to the fullest in supplying data and information.

It is our idea that the statistical department will be of great help in furthering the aims of the gas industry.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

Lesson No. 176

Carburetted Blue Gas

CARBURETTED blue gas or water gas is intrinsically a mixture of blue gas and oil gas. It is understandable that the thermal value of the carburetted blue gas must be considerably higher than that of blue gas, but not as high as that of oil gas. In this case the straight blue gas acts the diluent. The thermal value of the carburetted blue gas will depend more than anything else on the proportion of gas oil that is cracked, or, in other words, on the proportion of oil gas that is mixed with the blue gas. One of the great advantages of this process of making manufactured gas is that it is very easy to make a carburetted water gas of any desirable thermal value, from a straight blue gas containing no oil gas at all of 300 B.t.u. per cubic foot to a gas with as high a thermal value as 800 B.t.u. per cubic foot or even more. The adjustment in thermal value is secured by increasing or decreasing the amount of oil vaporized and also to some extent by exercising control on the character of the oil that is vaporized.

Composition of Carburetted Blue Gas

Oil gas is, of course, composed of hydrocarbons and these are generally reported in the ordinary gas analysis as methane and illuminants. A complete analysis of a carburetted blue gas is given below.

	Per Cent
Carbon dioxide, CO_2	4.8
Carbon monoxide, CO	29.8
Hydrogen, H_2	32.0
Methane, CH_4	13.1
Ethane, C_2H_6	2.9
Butane, C_3H_8	0.3
Ethylene, C_2H_4	9.8
Butylene, C_3H_6	2.8
Propylene, C_4H_8	1.7
Higher hydrocarbons (mostly benzene)	1.5
Oxygen, O_2	0.0
Nitrogen, N_2	1.3
	100.0

This gas would have a gross heating value of approximately 710 B.t.u. per cubic foot, and is therefore much higher than the common run of carburetted water gas that is made at the present time. The analysis is also in far greater detail than is ordinarily carried out, but it is interesting in showing the amount and character of the hydrocarbons that are found in a high grade carburetted water gas.

Another carburetted water gas which has a heating value of 483 British thermal units per cubic foot (gross) has the following composition: Carbon dioxide, 5.3 per cent; illuminants, 5.9 per cent; carbon monoxide, 34.7 per cent; hydrogen, 38.3 per cent; methane, 10 per cent; oxygen, 0.3 per cent, and nitrogen 5.5 per cent. A comparison of the two analyses will readily show why the first gas is so much higher in thermal value, in that the illuminants and methane in the second case amount to only 15.9 per cent, while in the first case they amount to 32.1 per cent. In another analysis, where the gas contained 27 per cent of hydrocarbons and methane, the heating value of the gas was 493 B.t.u. per cubic foot.

Problems of Gas Oil Addition

It must not be supposed that the addition of oil gas, made from gas oil, to the blue gas does not introduce special problems of its own. It is impossible to obtain a gas oil which is entirely free from sulphur compounds, and in fact gas oils are constantly appearing on the market which contain large amounts (comparatively speaking) of sulphur compounds. This is a serious matter to the gas engineer, for the gas that he manufactures from this oil will contain appreciable quantities of sulphur impurities which are not present in the straight blue gas, or at least in a limited amount only. Thus, for example, organic sulphur will not be found in blue gas, but it is a constituent of carburetted blue gas. The presence of these impurities in the gas simply means that a great deal of attention must be paid to the problem of purifying the gas, and in order to facilitate this process as much as four to five per cent of air is added to the gas. This will increase both the oxygen and nitrogen content of the carburetted blue gas and reduce its thermal value.

In using gas oils which are not properly cracked there is always danger present that the higher hydrocarbons, particularly the indene and styrene, will polymerize (that is, one unit of the hydrocarbons will combine with another in order to form a more complex substance which soon attains the solid condition). Solid resins are formed in this matter and these deposit in the meters during cold weather and have been known to cause all sorts of trouble.

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

JULY

July sun calls for frequent plunges, and while a great many folks seem to be able to get upon the sand behind a gay umbrel' there is a heap o' others that have to be content with a dip before eight in the morning or after five p. m., in their own home. Play up to these stay-at-homes; sell them hot water service via the self-action gas water heater. If you wish to go after the "umbrel' crowd" sell them gas refrigeration, gas house heating, as you sell the same idea to the old general public.

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RETAILING BY CARLOADS

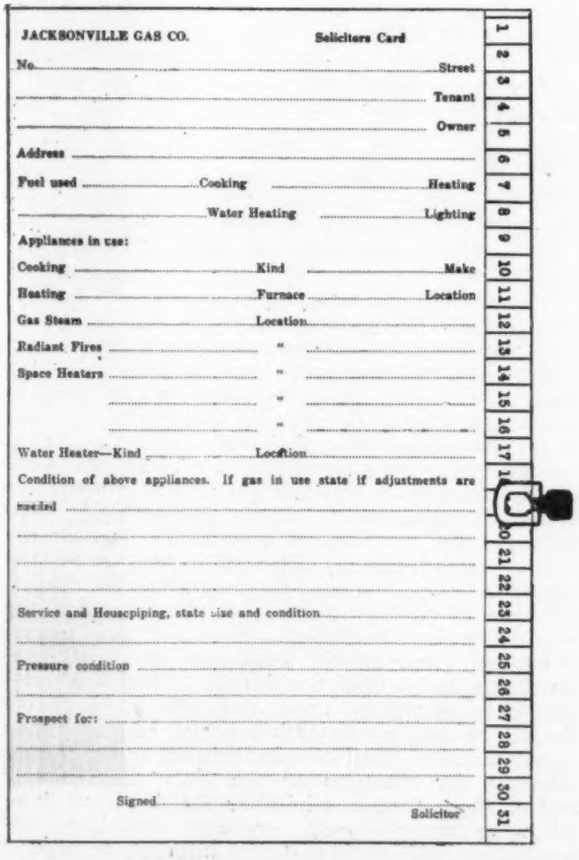
Eileen Faginkrantz

BUSINESS depression, so widely rumored in Florida, meant little to the Jacksonville Gas Company, which has just closed one of the most successful sales in the history of its New Business Department. Two hundred and seventy-eight gas ranges of standard make were sold in a two-week period, in the face of the popular supposition that there is nothing doing in this line at this season of the year, and the further supposition that business is bound to be slow in this territory as an aftermath of the late Florida boom.

An ordinary government post-card was the medium used by the Gas Company to arouse city-wide interest in the sale before it opened. This card was printed in script from a copper-plate, reproducing a handwriting as individual as yours or mine (and as humanly imperfect). The appearance of the card itself attracted attention, while the pithy message it carried started the housewife to realizing that she must have a new gas range, and that this sale was her ideal opportunity.

Card Mailed to All Customers

The card was mailed to the Gas Company's entire list of consumers a few days before the opening of the sale; that is, to every address in the city having a prepay or standard meter. And when the first announcement ads. appeared in the newspapers a few days later, things began to move on the sales floor of the Gas Company.



JACKSONVILLE GAS CO. Solicitors Card

No. ..... Street

..... Tenant

..... Owner

Address .....

Fuel used ..... Cooking ..... Heating

..... Water Heating ..... Lighting

Appliances in use:

Cooking ..... Kind ..... Make

Heating ..... Furnace ..... Location

Gas Steam ..... Location .....

Radiant Fires ..... " .....

Space Heaters ..... " .....

..... " .....

..... " .....

Water Heater—Kind ..... Location .....

Condition of above appliances. If gas in use state if adjustments are needed .....

Service and Housepiping, state size and condition .....

Pressure condition .....

Prospect for: .....

Signed .....

Solicitor

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Four carloads of nationally advertised gas ranges, of two standard makes, were offered the public in this event. The newspaper ads. showed clearly that prices had been cut from twelve to twenty per cent.

The people read and came in to see. For the Gas Company has been educating its customers to an appreciation of gas appliances of standard high quality and modern design. And hence the trade names of these gas ranges and the words, "With Lorain Oven Heat Regulator" and "With Roper Complete Oven Control," carried a real buying appeal. When the prospective buyer realized that a small down payment was all that stood between him (or her, as the case was more likely to be), and one of these quality ranges at a bargain price, it about meant that a sale was made.

The sale was originally planned for one week, but was extended a second week by popular demand. One hundred and forty-seven ranges were sold the first week while one hundred and thirty-one went into homes the second week.

Domestic Science Department a Feature of the Sale

A feature of the sale was the domestic science department conducted by Mrs. Lola Tipton, who is a gracious and charming lady and a clever saleswoman, as well as an expert on dietetics and a mighty good cook. Mrs. Tipton gave daily demonstrations of oven control cooking during the sale, and served prospective customers and others with helpings of golden biscuit, fluffy cake, and juicy roast. She was able to stress the advantages of automatic oven control during these demonstrations and in her talks with prospective customers, and it is interesting to note that notwithstanding the higher prices of ranges having this feature, more oven control ranges were sold than those without the device.

A number of the sales were made by the outside men of the sales department. By means of follow-up prospect cards which are kept on file in the office, the outside salesmen were able to call on a selected list of prospects known to be interested in a new gas range. The outside men closed many of these prospects during the sale.

A prospect card was used by the sales department of the Jacksonville Gas Company with colored tabs to indicate at a glance, without removing the card from the file, the kind of appliance in which the prospect is interested. These tabs slide across the top of the card, from end to end, and may be set at any one of the thirty-one spaces into which the top of the card is divided. The thirty-one spaces, numbered consecutively from one to thirty-one, stand for the days of the month. Thus if a prospect is to be worked about the 20th of the month the tab is set for the 19th and the card is pulled from the file on that date and handed to the proper salesman for attention on the 20th. This simple and efficient system minimizes the detail work of following up prospects, prevents oversight and duplication and keeps essential information always at the finger tips of the sales department.

Much of the credit for the success of this sale belongs to the sales manager, G. H. Schlatter, who planned it, prepared the advertising, and worked out all the details.

Mr. Schlatter believes that success is to be had through serving your public. He believes that this consists not only in giving your public what it wants but in educating your public to know, appreciate and demand the best merchandise in your field. In the case of gas appliances a steadily increasing body of satisfied customers is proving the truth of this to the Jacksonville Gas Company.

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HOW THE PUBLIC SERVICE COMPANY OF COLORADO DOES IT

J. B. Dillon

With the coming of spring the Public Service Company of Colorado have renewed their stock selling to customers, and knowing that the basement furnace will be given a rest, they are pushing the sale of hot water, gas heated appliances. Just how they are doing it the following newspaper advertisements will show.

You Save about $300 or more Per $100 by owning this Tax Exempt Security
Public Service Company of Colorado
Usual Connections Free
Know the Low Cost of Instant Hot Water Service
95¢ DOWN
$10.00
$5.00 MONTH
Public Service Co. of Colorado

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99 CENTS DOWN

The Illinois Power and Light Corporation staged a range sale in April that put sales 35 per cent over the monthly quota. This sale was put over despite a most unusually rainy April by a special window display and by advertising of an unusual type in the daily newspapers. Two of the advertisements reproduced here will give you an idea of the new trend that company has taken in advertising gas appliances. These advertisements, it is said, caused more favorable comment that anything the company has ever used. The story of the sale is contained in these advertisements and may furnish an idea for the gas man who has not conducted a range sale as yet this year. It might be well to say that the terms used by the Illinois company were 99 cents down and the balance in twelve equal monthly payments.

FOR BETTER PUBLIC SERVICE!

ILLINOIS SERVICE

***The* Oil Lamp Passes**

Mr. Urban Dweller—

You would hardly think of such an appliance as an oil lamp for your living room, this day and age; you hardly remember that such a lighting appliance ever existed; you now demand modern self-starting illumination in your home.

But—

how about your home manager and the heart of your home, the kitchen—have you given them the thought you should—have you provided an oven-regulated self-controlled gas range for your home?

If Your Home-manager

does not use a modern, porcelain enameled oven-regulated gas range, she uses up her time and energy needlessly—you should see that she has more time for better things—that your kitchen is operated more efficiently, especially NOW that

Only 99c Down

puts a modern Gas Range in your home.

Bridge Phone 1041 — Illinois Power and Light Corporation — 414 Missouri Ave.

LOWEST UTILITY RATE NOT ALWAYS THE BEST, SAYS HADLEY OF YALE

Gas, electric and other public utility rates can be productive of the best results, in terms of public usefulness, only if they are based upon consideration both of those using the service, and of those furnishing it, declares Arthur Twining Hadley, eminent economist and former president of Yale University.

"Everybody agrees that rates should be reasonable. But what is a reasonable rate? And how shall we go to work to secure it? To people who use the term unthinkingly a reasonable rate means a low rate. But this is altogether too one-sided," he says.

"A reasonable rate is one which can be justified on the grounds of public policy. It must not be so high as to place an unfair burden on the people who require the service, nor so low as to inflict an unfair disability on the people who render it."

Seven main principles underlie the establishment of equitable public utility rates, according to Dr. Hadley, as follows:

"1. Rate regulation must be considered from producers' and consumers' points of view.

"2. If scarcity has made the price high, let capital have sufficient freedom to remove that scarcity.

"3. Permanent reduction of price is even surer to follow when we have large units of capital invested, for the large unit must make sales to cover its overhead and can profitably reduce rates to this end.

"4. Progressive industries depend for their success upon rendering increased service at lower unit cost.

"5. Reducing rates to cost permitting only normal profit without allowance for risk, prevents the introduction of modern improvements and thereby defeats its own ends.

"6. Historical cost as a basis for rate making is wrong in principle and dangerous in practice. If a rate is low in comparison with what prevails under similar conditions elsewhere and has developed traffic to an unusual degree, the profit has been well earned.

"7. Perhaps most important and oftenest ignored is the principle that public service commissions should be given opportunity to study history of past attempts at regulation and economic principles which have determined their success or failure. They should not be so overwhelmed with specific cases and complaints as to have no time for dealing with general questions of economic policy."

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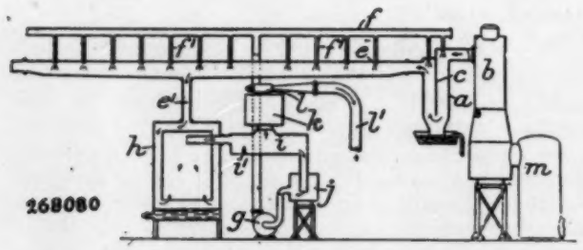
PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

DISTILLATION OF COAL

IN THE distillation of carbonaceous materials such as coal by the passage of superheated steam or steam and gas through the mass of coal, the mixture of gas and vapor from the retort is used to heat water or liquor to approximately the boiling temperature, the water then being subjected to reduced pressure for the purpose of producing steam for use in the distillation. This operation is carried out according to British Patent No. 268,080 in the apparatus which is shown in the accompanying illustration.



The hot gases from one of a pair of retorts (b) enter a scrubber (a) which has a partition (c) and in which sprays of liquor from a pipe (f) are provided. The gases then enter a main (e) which has a number of sprays (f^1) and a liquid outlet pipe (e^1) through which the highly heated liquor passes to a settling tank (h), from which the tar is removed at the bottom. The liquor passes to an evaporator (i) in which it flows over a weir (i^1) and thence through a tank (j) to a pump (g) which circulates it to the pipe (f). A steam receiver (k) is mounted over the tank (i) and is provided with a steam ejector (l) of highly superheated steam whereby the pressure in the tank (i) is reduced and steam flushed off the liquor. The mixed steams pass by a pipe (l^1) to the retorts after passage through a heat regenerator (m). A temperature of not more than 750 degrees C. is maintained in the retorts.

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EXAMINING COMBUSTION PRODUCTS FROM COAL GAS

AN INVESTIGATION was made to determine the presence of carbon monoxide in the products of combustion obtained by burning coal gas. Both the carbon monoxide in the air and that in the coal gas combustion products were simultaneously determined. The gas examined was made in London and had a gross calorific power of 490 to 500 B.t.u. per cubic foot at 60 degrees F. and 30 inches barometer, saturated. The gas analyzed as follows: carbon dioxide, 3.7 per cent, oxygen 0.7 per cent, unsaturated hydrocarbons 3.7 per cent, carbon monoxide 21.0 per cent, methane 18.1 per cent, hydrogen 40.5 per cent, and nitrogen by difference 12.3 per cent. The volume of air required for the combustion of one cubic foot of gas was 4.036 cubic feet, yielding 0.539 cubic foot of carbon dioxide plus 3.311 cubic feet of nitrogen, making a total of 3.85 cubic feet.

The conclusions derived were as follows:

The iodine pentoxide method for determining carbon monoxide has been used to investigate the combustion products from flames. An accuracy of between one and two parts per million has been attained.

Flames burning in the air of an ordinary room appear to emit traces of carbon monoxide.

The concentration of carbon monoxide in the undiluted dry products was found to be 31, 44 and 13 parts per million in three separate cases. Journal of the Society of Chemical Industry, 1927, pages 201-6T.

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REACTIVITY OF COKE

THE differences in reactivity exhibited by different cokes are attributed to somewhat other factors than those described by Nettlenbusch. The reactivity of a coke depends essentially on the accessibility of its carbon, particularly its amorphous carbon, to carbon dioxide, this being determined by the specific number, form, and diameter of those pores of which the surface is accessible to the gas without unduly prolonged diffusion. The two principal factors in deciding this are the nature of the parent coal and the degree of decomposition of the tar coke (the solid decomposition product of non-expelled tar) corresponding to the carbonizing temperature. While graphite may be deposited on coke through decomposition of methane, it is also derived from decomposition of the tar coke at high temperatures. The reactivity of coke, under given experimental conditions, may vary as the experiment proceeds, owing either to partial gasification of the accessible carbon, or to an increase in the quantity of accessible carbon through changes in shape, due to fracturing, for example. Brennstoff Chemie, 1927, volume 8, pages 121-3.

NEWS OF THE GAS INDUSTRY

Semet-Solvay Engineering Corp. Finishes Construction of Complete Water Gas Machine in Thirty-one Days

Waukesha, Wis. — The Semet-Solvay Engineering Corporation of New York has just finished constructing a complete Steere water gas machine in exactly thirty-one days from the date of signing a contract with the Wisconsin Gas and Electric Company for its plant in this city. As far as can be learned, this is a record for the gas industry.

The contract was signed May 16. Gas was made and the machine went into regular service on June 16. Under the agreement, work was to have been completed in 50 days, which meant that the machine had to make gas on July 4.

As an indication of the manner in which the work went through, it may be interesting to note that the shells for the generator, carburetor and superheater and practically all the standard parts of a Steere water gas machine, such as doors, various supports, piping for steam, gas, oil, water and air left the Semet-Solvay shops at Owosso, Mich., May 21. They arrived at Waukesha on May 23, routed by way of Grand Haven and car ferry across Lake Michigan. The superheater shell was on its foundation May 26 and the other two shells were in place the following day. On June 1 the brick linings and checkerbrick were delivered and the bricklayers went to work.

Air mail was employed to deliver drawings and specifications between the company offices, shops and construction staff.

Piping for the backrun, foul main, grasshopper connection and erection of stairs, railings and other items of construction were all welded, giving uniform strength and neatness to the equipment.

Operating floor—6 ft. Steere Water Gas Machine, built in 31 days.

All shells are being covered with aluminum paint, a recent departure in Steere water gas construction. Extensive investigation and testing have established that aluminum paint has much value in reducing losses from radiation. Its desirability in lending a better appearance to the plant has long been appreciated. The last obstacle to its use was removed when a small gutter was placed at the top of the superheater shell to catch drippings of tar and condensate from the stack. All matter that might spoil the appearance of the superheater is captured and drained from the gutter into the seal pot, leaving the outside of the shell unsoiled.

With steady operation made possible the third week in June, instead of July 4, the date when the contract called for production, the gas company is all ready for its summer load.

Stacey Manufacturing Co. Receives Contracts for Holders in Jacksonville and Owatonna

The Stacey Manufacturing Co., Cincinnati, Ohio, has received contract for the erection of a 150,000 cu. ft. capacity two-lift holder for the Interstate Power Company of Owatonna, Minn. Materials are now in course of fabrication in their shops and erection will be started immediately.

The Jacksonville Gas Company, Jacksonville, Fla., has placed an order with the Stacey Manufacturing Company, Cincinnati, Ohio, for a 250,000 cu. ft. capacity two-lift holder, including yard connections, valves, etc.

* * *

Cohoes Places Ban on Inferior Tubing

Cohoes, N. Y.—Following the action of the city administration of New York City in outlawing gas tubing which fails to bear the approval of the Board of Health, the City Council of Cohoes, N. Y., on April 5, 1927, also adopted an ordinance relative to the sale and use of tubing connections for illuminating gas fixtures and appliances. It is now a misdemeanor, punishable by fine and imprisonment, to use, sell, expose or offer for sale, defective or non-registered flexible gas tubing in the city of Cohoes.

A. G. A. Appoints Mr. Paul A. Ryan as Statistician

New York.—Announcement has been made by the American Gas Association of the appointment of Paul A. Ryan as statistician of the association.

Mr. Ryan graduated from the Massachusetts Institute of Technology in 1923, and later became assistant power engineer for the New York and Queens Electric Light and Power Company of New York. In 1925 he was awarded one of the prizes offered by Bonbright & Co. in a nationwide contest for the best papers on the development of the electric light and power industry.

Paul A. Ryan

He is also a graduate of the two-year course in public utility management at the Harvard School of Business Administration, receiving the degree of M. B. A. in 1926. Subsequent to graduation he was on the staff of the Harvard Business School, engaged in research in public utility economics under the direction of Prof. Philip Cabot, who is in charge of the public utility work at Harvard. Mr. Ryan has also been associated in consulting work on rates and market analysis for gas and other utilities.

Previous to joining the A. G. A. staff on July 1 he was on the chief statistician's staff of the American Telephone and Telegraph Co. in New York.

The statistical department has been broadened to give the industry a more comprehensive service, according to Alexander Forward, managing director of the A. G. A.

"The gas industry has made such rapid growth in the past few years that authentic facts and figures are an absolute essential," says Mr. Forward. "It is such data that give us an accurate index of our activities and help us plan for the future."

* * *

William G. Rudd Elected Vice-President of the Peoples Gas Light and Coke Company

Mr. Samuel Insull, president of the Peoples Gas Light and Coke Company, on June 15th announced the election of Mr. William G. Rudd as vice-president in charge of operation of the company. Mr. Ruud has been connected with the company for twenty-two years, serving in various capacities from laborer to chief operating engineer. As vice-president, Mr. Rudd succeeds the late John H. Eustace. Mr. Rudd will have as his assistants: H. E. Bates, assistant chief engineer in charge of the engineering department; R. B. Harper, chief testing engineer, in charge of the laboratories and research work, and George C. Lowell, construction engineer.

* * *

Factory Representatives Change Location

Messrs. C. O. Frary, W. D. Roberts and Barney Olson have changed their offices to 901-2 Lakeview Building, Chicago, Ill. They represent the Bryant Heater and Manufacturing Co., of Cleveland, Ohio; the Canton Clothes Dryer Co., of Canton, Ohio, and the Lovekin Water Heater Co., of Philadelphia, Pa.

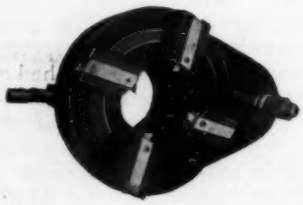
* * *

Stacey Bros. Gas Construction Co. Report Record Tonnage on Holder Construction

The Stacey Bros. Gas Construction Company, of Cincinnati, Ohio, state that their outgoing tonnage on holder construction for the week ending June 12th was the greatest in the history of the company.

New Toledo Automatic Pipe Cutter—Distinctive Advantages Claimed

The new "Toledo" automatic pipe cutter for cutting 2 to 4 inch pipe, is the most remarkable pipe tool that has been put on the market in the last several years, according to its manufacturers, the Toledo Pipe Threading Machine Company, of Toledo, Ohio.



It weighs but 65 pounds, is simple in construction, easy to operate and handle. It cuts smoothly and leaves a straight square-end cut with no inside burr. The outside edge is neatly chamfered, making it easy to start the threading dies on the pipe. Its knives are fed automatically, requiring no attention on the part of the operator. A single hand wheel sets them for cutting, or the quick return of the knives after the pipe is cut off. There is but one jaw to center the tool on the pipe, and it holds the tool true and rigid.

The cutter is operated anywhere either with the regular ratchet handle furnished with the "Toledo" No. 2 or No. 25 threading tools or with a "Toledo" power drive. When operated with the standard "Toledo" power drive, this new pipe cutter will cut off 2-inch pipe in 20 seconds, and 4-inch pipe in 65 seconds.

The manufacturers claim that this new pipe cutter will eliminate pipe-cutting troubles on 2-inch to 4-inch pipe for all time. They will be glad to furnish further information, and quote price to those interested.

An Outstanding Contribution to Gas Technical Literature

New York. — What represents one of the most comprehensive reviews of scientific progress affecting the manufactured gas industry is now available in chapters prepared by the Chemical Committee of the Technical Section of the American Gas Association.

Recent progress in science in relation to the gas industry is covered in seventeen chapters, each prepared by a member of the committee fully qualified to write authoritatively and to pass critical judgment on the subject matter.

Each of the chapters has been printed in separate pamphlet form, although a limited number of bound volumes are available.

Copies of the chapters and the bound volumes may be had by writing the American Gas Association, 420 Lexington Avenue, New York.

The complete list of the chapters, with the author's name, and prices, is given below:

Constitution of Coal, J. J. Morgan, $0.25.

Physical and Chemical Properties of Coke in Relation to Its Manufacture and Use, A. R. Powell, $0.30.

Carbonization of Coal, H. J. Rose, $0.30.

Water Gas Manufacture, W. H. Fulweiler, $0.30.

Complete Gasification of Coal—Use of Oxygen for Gas Making, R. S. McBride, $0.25.

New Processes of Interest, R. T. Haslam, $0.25.

Cleaning of Combustible Gases with Cottrell Electrical Precipitation Processes, N. W. Sultzer, $0.25.

Tar Refining and Tar Products, J. M. Weiss, $0.30.

Light Oil Recovery and Refining, E. F. Pohlmann, $0.30.

Recovering of By-Products Other Than Tar, Ammonia and Light Oil, H. A. Curtis, $0.25.

Gas Purification, F. W. Sperr, Jr., $0.30.

Corrosion, W. J. Huff, $0.30.

Materials of Construction, J. F. Anthes, $0.25.

Blending Natural and Manufactured Gas, C. J. Wright, $0.25.

Recovery of Waste Heat in Gas Manufacture, E. L. Hall, $0.25.

Convention Calendar

July

5-7—Michigan Gas Association. Annual convention, Grand Hotel, Mackinac Island, Mich. Albert G. Schroeder, secretary-treasurer, Grand Rapids, Mich.

September

12-16—Pacific Coast Gas Association. Annual convention, Hotel Casa del Ray, Santa Cruz, Cal. Clifford Johnstone, executive secretary, San Francisco, Cal.

...

Analytical Methods and Tests, A. F. Kunberger, $0.35.

Application of Physical and Physico-Chemical Research to Control Measurements in Gas Manufacture, S. P. Burke, $0.30.

The chapters will be abstracted in an early issue of the American Gas Journal.

* * *

Semet-Solvay Engineering Corporation Remodeling Water Gas Plant of Penn. Power and Light Corporation

Williamsport, Pa.—The Semet-Solvay Engineering Corporation, of New York, is proceeding with a program for remodeling the water gas plant of the Pennsylvania Power & Light Corporation. Construction is going forward on a washer cooler, a wash box, considerable plant piping and other miscellaneous equipment. Two water gas machines are now in service.

A standard washer cooler with seven stacks of Steere cooling coils is being built. The cooler will be 41 feet high and of welded construction. It will be able to handle up to 2,000,000 cubic feet of gas daily. Last year the Steere Engineering Company built a purifier at this plant, and this new work is the next step in the utility's rebuilding program.

Welded Purifiers in Lawrence

Lawrence, Mass. — The Lawrence Gas and Electric Company has ordered from the Semet-Solvay Engineering Corporation an addition to its gas purifying equipment to take care of future demands.

The purifier will be of welded steel construction, 30 feet wide, 50 feet long and 15 feet deep; built in two compartments, each containing three layers of Steere purifier trays. A track along the top of the present purifier boxes will be extended to enable a gantry crane to handle the doors.

No rivets will be used anywhere in the entire construction. Welding makes a much finer looking job and can be more easily protected by painting. Work will be completed during the present summer.

* * *

Ocean Gas Company Installing Cooling and Washing Apparatus

Toms River, N. J.—The Ocean Gas Company is equipping its water gas plant with new cooling and washing apparatus. The Semet-Solvay Engineering Corporation has started work on a Steere multiple washer, a washer cooler and accompanying cooling coils. Gas at the rate of 500,000 cubic feet in 24 hours will be sent through the equipment when completed, with a reserve capacity of equal amount for future requirements.

The washer cooler will be of standard Steere construction, 41 feet high, and will contain 30 feet of wooden grids. Gas will be received in this apparatus at a temperature approximating 185 deg. Fahrenheit and cool it to 90 deg. F. Both the multiple washer and the washer cooler will be of welded steel construction, which the Steere organization originated and developed for the gas industry.

* * *

L. P. Sullivan Appointed Southeastern Representative for Reliable Stove Co.

Reliable Stove Co., Cleveland, O., has appointed Mr. L. P. Sullivan as representative for the Reliable Division in the Southeastern section of the United States.

Legislation to Encourage Canadian Coke Production

U. S. Consul Jack D. Hickerson, at Ottawa, Canada, has summarized as follows an "Act to Encourage the Production of Domestic Fuel from Coal Mines in Canada," which act received Royal assent on April 14, 1927:

"The Act is primarily to assist the coal mining industry in the Maritime Provinces, but is general in its application. Under it the Minister of Mines may enter into an agreement for a period not exceeding fifteen years with any person approved by the Governor in Council for the construction and operation of coal works. By 'works' is meant by-product recovery coke oven plants or such other carbonizing plants as have for their object the production by heat treatment from coal of a coke suitable for domestic use and of gas, tar and other by-products.

"The act authorizes an annual payment to any contractor of a sum equal to 4 per cent of the cost of constructing the works, if the contractor be an individual, and a sum equal to 5 per cent of the cost of the works if the contractor be a municipality or other public corporation. It is provided, however, that the payment shall in every case, be reduced by 5 per cent for each unit of percentage by which the quantity of coal mined in Canada used in the works for the production of coke falls below 70 per cent of the total quantity of coal so used. Under the terms of this proviso, therefore, companies which use only 50 per cent of Canadian coal would receive no benefits whatever from the act.

"At a discussion of the measure in Parliament the Minister of Mines gave specific illustrations of how the new act would work out, which was, using Montreal as a basis for the calculations:

Per Cent of Canada Coal Used	Assistance per ton of Coke
70	$0.86
65	.69
60	.50
55	.27
50	Nil

"The speaker who opposed the act stated that the measure involves 'commitments which may amount to over $9,000,000.'"

Koppers Company Gives Scholarship to Gas Engineering Department of Johns Hopkins University

Baltimore, Md.—Through H. B. Rust, president, the Koppers Company, of Pittsburgh, Pa., has given a scholarship of $450 a year for a period of four years to the Gas Engineering Department of the Johns Hopkins University, according to Wilbert J. Huff, professor of gas engineering at the university.

The scholarship is to be awarded to a deserving student in the department, and will be given preferably to advanced and graduate students. Applications for the scholarship may be had by anyone interested.

This is the fourth new scholarship to be given to the Department of Gas Engineering this year. Two scholarships were provided by the Consolidated Gas Company of New York, N. Y., and one was given by the Washington Gas Light Company, of Washington, D. C.

* * *

Tracyfier Manufacturers Add to Their Engineering Personnel

Andrews-Bradshaw Company, of Pittsburgh, Pa., manufacturers of the Tracyfier, announce the addition to their personnel of Mr. R. N. Robertson, as chief engineer, and Mr. A. L. Menzin, as director of research.

Mr. Robertson comes from the American Smelting & Refining Company, having been with them for the past twenty years. He is a Cornell man, class of 1905.

Mr. Menzin has had extensive designing, construction and research experience on steam power plant equipment, having been for some years chief engineer of the Tracy Engineering Company, and prior to that consulting engineer with the Edge Moor Iron Company, manufacturers of Edge Moor boilers. Mr. Menzin is a graduate of the University of California, class of 1907.

Stacey Bros. Extend Office

Due to the large increased volume of business that Stacey Bros. Gas Construction Company of Cincinnati, Ohio, have booked in the past few days, it was decided recently at a meeting of the board of directors to increase the size of their office building to meet the unprecedented demand for Stacey Bros. holders.

There is now in the course of construction a large extension to the present office building, which will practically double its present capacity.

This company has booked some very large orders for gas holders, and have completed one ten million cubic foot gas holder in Buffalo in 1926 and at the present time are erecting another ten million cubic foot holder at Long Beach, Cal.

Mears-Kane-Ofeldt Company Rebuilds New Offices—Changes in Branch Office Locations

Mears-Kane-Ofeldt, Inc., have just completed tearing down and rebuilding the general and executive offices at their factory, 1907 East Hagert Street, Philadelphia, and are now ready to receive visitors in their new offices.

On April 28 the New York offices in charge of Mr. A. V. Leudemann were moved from 1760 Woolworth Building to 9-15 Park Place, and on May 26 the Boston office, in charge of Mr. E. D. Knapp, was moved from 101 Tremont Street to 100 Arlington Street. Incidentally it might be of interest to the gas men of New England, to whom Mr. Knapp is very well known, to hear that he has just passed through a very serious illness and operation and is now well on the way to recovery.

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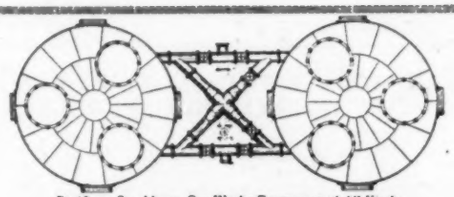
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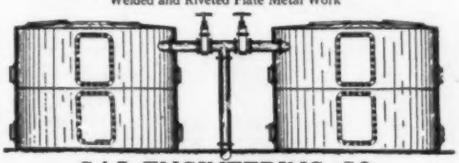
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ADVANTAGES AND DISADVANTAGES OF DRY QUENCHING OF COKE

(Continued from page 9)

experience at least, the dry quencher has a very serious disadvantage.

(3) If the coke is to be used for domestic market, the absolutely dry coke from a dry quencher is apt to be a source of complaint due to the dustiness of the coke. The producers of continuous vertical coke undoubtedly are already familiar with this detail. For such a market we have found it necessary to sprinkle the coke just as it drops into the domestic storage bins prior to loading the trucks. This method gives us dry fuel for our producers and water gas machines.

Conclusion

I will, therefore, conclude with the following points which seem to be indicated by our experience thus far:

1. The dry quencher appears to be a success economically where use for steam is available when credit for steam alone is taken.

2. The dry quenching operation in addition has several real intangible credits which are difficult to value, and have been discussed in detail in the paper.

3. Generally speaking, the dry quenching operation breaks the coke up so that it averages a smaller size and has a higher percentage of breeze than the wet quenched coke, except that in cases where crushing of the large coke is necessary to meet a market, in which case the total breeze content of the wet quenched coke is slightly higher than the dry quenched coke. This tendency to break coke may be considerably reduced by improving the design of the coke handling to and from the dry quencher, which we know is very severe on the coke in our case and should be improved upon in future design.

4. The coke structure of dry quenched coke is apparently not stronger fundamentally than wet quenched coke. This was considerable of a surprise to us, but we have such a volume of convincing data on this point, all of which is surprisingly consistent, that apparently there is no doubt of it. The apparent strength to shatter testing of dry quenched coke is due to the fact that the coke has been rougher handled and only the stronger pieces have survived. When both cokes have been handled equally they break down at almost exactly equal rates and the dry quenched coke always is smaller and contains more breeze, no matter how much additional handling takes place, except where crushing is necessary as described in item No. 3.

5. Where smaller coke is desired and coke crushing is necessary of the large pieces, the dry quencher takes the place of and eliminates the expense of power and maintenance of a coke crusher, and the total breeze production is less than with wet quenched coke.

RECENT GOVERNMENT PUBLICATIONS OF INTEREST TO THE GAS ENGINEER

Comparative Tests of Six-Inch Cast-Iron Pipes of American and French Manufacture, by S. N. Petrenko. Bureau of Standards, Technologic Paper 336. 15 cents.

U. S. Government Master Specifications on the following materials, issued under Bureau of Standards circular numbers indicated: 323, Plastic Magnesia Cement (Magnesia Oxychloride). Used as flooring, bases, wainscots, etc., 5 cents; 165 (2nd edition), Olive Drab Paint (Semi-paste and Ready-Mixed), 5 cents; 89 (3rd edition), White Paint and Tinted Paints Made on a White Base, Semi-paste and Ready Mixed, 5 cents; 82 (3rd edition), Raw Linseed Oil, 5 cents; 33 (4th edition), Portland Cement, 10 cents; 330, Boiled Linseed Oil, 5 cents; 335, Hard Fiber Sheet Packing, 5 cents; 336, Metallic-Encased Gaskets, 5 cents; 93 (3rd edition), Paints, Iron Oxide and Iron Hydroxide, 5 cents.

Coal in Europe, by John R. Bradley. Bureau of Foreign and Domestic Commerce Trade Information Bulletin 489. 10 cents.

Safety Code for the Use, Care, and Protection of Abrasive Wheels. Bureau of Labor Statistics, Bulletin 436. 10 cents.

Blast-Furnace Gas Studies, by J. F. Barkley. Bureau of Mines Technical Paper 401. 5 cents.

Coal in 1924, by James E. Black, L. Mann, and F. G. Tryon. Bureau of Mines Mineral Resources separate. 20 cents.

Petroleum in 1925, by G. R. Hopkins and A. B. Coons. Bureau of Mines Mineral Resources separate. 10 cents.

Some Economic Phases of the Carbon Black Industry, by G. R. Hopkins. Bureau of Mines Information Circular 6033. Mimeographed.

The Meaning of Specifications for Gasoline and Kerosene, by A. J. Kraemer. Bureau of Mines Information Circular 6013. Mimeographed.

The Interpretation of Crude Oil Analyses (Bureau of Mines, Hempel Method), by N. A. C. Smith. Bureau of Mines Serial 2806. Mimeographed.

Removing Paraffin from Flowing Wells, by C. E. Reistle, Jr. Bureau of Mines Serial 2802. Mimeographed.

Analyses of Spindletop, Texas, Crude Oils, by A. J. Kraemer and Peter Grandone. Bureau of Mines Serial 2808. Mimeographed.

Properties of Typical Crude Oils from the Producing Fields of Venezuela, by A. J. Kraemer. Bureau of Mines Serial 2807. Mimeographed.

Prices indicated are charged by the Superintendent of Documents, Washington, D. C., for pamphlets. Send cash or money order; stamps and personal checks not accepted. When no price is indicated pamphlet is free and should be ordered from bureau responsible for issue.